Executive Summary

*The **Waste Composition and Capture Rate Study Report** for the City of St Paul (City) was conducted and prepared by HDR Engineering, Inc. (HDR) to understand the composition of material disposed of by City customers and how customers dispose of materials.*

The study aims to assist the City in better understanding the impacts of City services, such as traditional recycling and food scraps recycling, on the material types and the amount of materials disposed of by customers. The study evaluates the following:

- Participation rates for recycling
- Capture rate by material type for recyclable materials
- Composition of garbage and recycling
- Diversion opportunities
- Most common recycling contaminants
- Contamination rate of the recycling stream

Collection Program

The City's collection program underwent major changes in spring 2025. Previously, the City provided citywide coordinated garbage collection services for more than 65,000 residential properties, 1- to 4- units, since October 2018. The City has contracted citywide recycling collection services for approximately 128,000 residential customers for more than 30 years.

In June 2024, the City announced a seven-year contract with FCC Environmental for garbage, yard waste, and bulky item collection for 90% of the 1- to 4-unit properties. Beginning April 1, 2025, the City began providing garbage collection services for the remaining 10% of properties. The City also entered a five-year contract with Eureka Recycling for recyclable material collection from approximately 80,000 properties with 1- to 4-units.

The City, FCC, and Eureka Recycling provide weekly garbage and recycling services to all City customers. Customers are billed quarterly directly by the City, and all customer service requests and issues are handled by City staff. These changes to the City's collection system aim to provide reliable and simplified customer service.

Residential Demographic Data

The City determined that understanding demographic characteristics of service areas could reveal opportunities to support equitable collection services and increase the effectiveness of outreach materials. Communicating effectively with diverse residents can support the City's efforts to increase its recycling capture rate, reduce recycling contamination, and increase diversion rates to meet 2030 waste diversion goals.

Key findings of residential demographic themes relevant to service day include:

- The average City household size ranges from **2.1 to 2.9** people, depending on service day.
- The race and ethnicity characteristics of City residents vary by service day. Most residents serviced on Monday and Tuesday identified as white. Wednesday, Thursday, and Friday service days have more diverse populations, with significant populations identifying as Asian, Black or African American, or Hispanic/Latino.
- Monday has the lowest average percentage of bilingual English speakers. On the other service days, **10-20%** of residents speak at least two languages, with the highest portion on Wednesday and Thursday.
- The disabled population ranges from **10% to 15%** of the total population. Tuesday and Thursday have the largest proportion.
- Residents on Monday and Tuesday service days have the highest median income, at

approximately **$90,000**. The median income for residents on other service days ranges from approximately **$65,000 to $70,000**.

- Unemployment rates for the various service days range from **3.8%** and **5.4%**.

Waste Characterization Study Methodology

This study was conducted at an individual household level, where the garbage and recycling carts were collected randomly by the City collection crew. When City staff collected carts, they were tagged with sample information and transported to the waste characterization location.

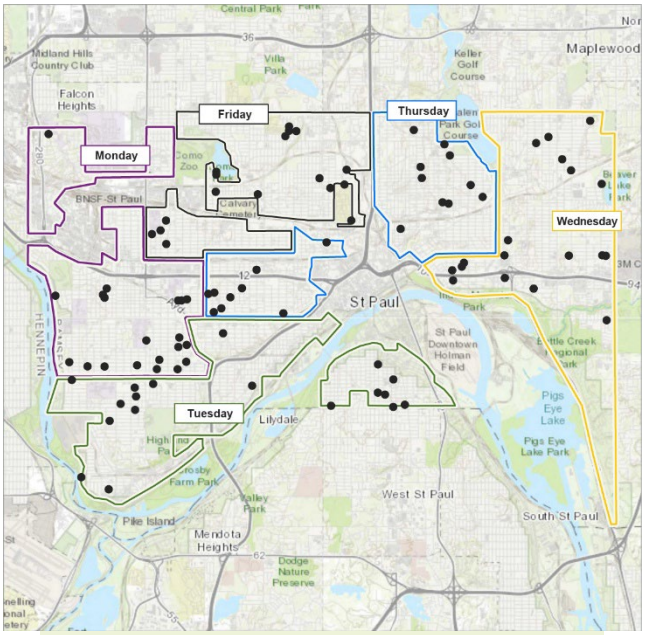
> *In total, **98 garbage** samples and **98 recycling** samples were collected by the City collection crew over the two-week period, with representative samples from each service day.*

Sample collection occurred on weekdays from Friday, January 24, 2025, through Thursday, February 6, 2025. The locations of the selected samples can be seen on the map.

The material categories for the waste characterization were based on the City's existing solid waste programs and were subdivided by specific material type, for **a total of 74 material categories**. The waste characterization area was equipped with various tools, including tables, five-gallon buckets for sorting, a scale, and bins for the materials post-sort for disposal.

The crew characterized garbage and recycling samples one at a time (representing one household). The material from the cart was emptied onto the sorting table and manually categorized into the material bucket categories.

Once sorting of a single sample was complete, HDR staff recorded the weights of each material category and took a photo of the material in the sorting container.





The waste sort area included buckets for each material category and an area for teams to sort the collected samples.





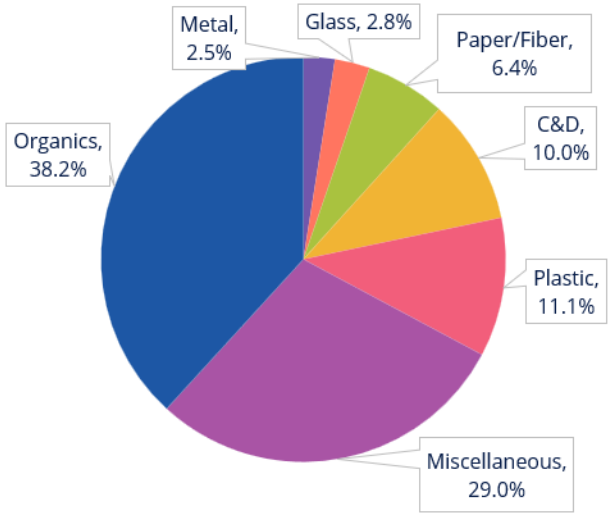
WASTE COMPOSITION RESULTS:

The results of the analysis include the garbage and recycling stream compositions by material type and service day. Additionally, calculations were made to identify the recycling capture rate by material and service day, evaluate the recycling contamination rate, and identify top contaminants.

> *The City's overall average recycling participation rate was **87%**.*

For all service days, the recycling set-out rate was higher than **80%**. Monday has the highest average set-out rate at **90%**, while Thursday has the lowest average set-out rate at **83%**.

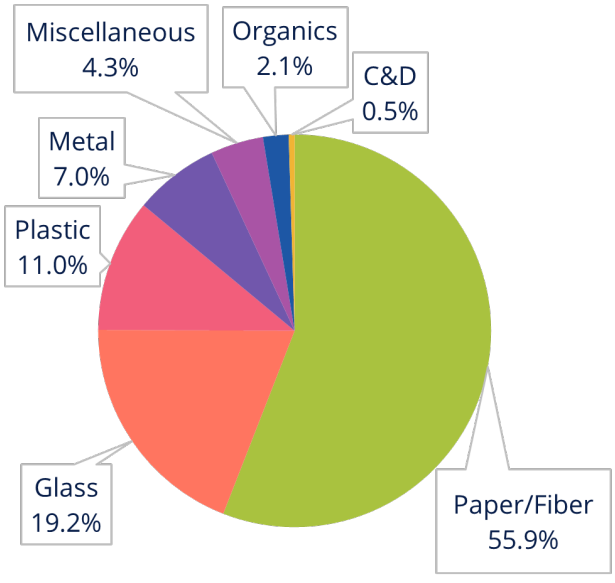
GARBAGE COMPOSITION RESULTS:



- The most common material (by weight) in the garbage stream was food scraps, then pet waste and bedding, edible food, and construction and demolition (C&D) materials.
- The amount of edible food in the waste stream ranged from **6%** to nearly **16%** by weight.
- Even given the light weight of plastic bags and plastic film, these two material types were found in the garbage stream consistently across all service days. Plastic bags comprised between **1.7%-2.9%**, and plastic film comprised between **2.1%-2.7%** of the waste stream.
- Textiles ranged from **1.7%** to **5.4%** of the overall garbage stream.
- The average garbage weight collected was **33.9 pounds** per household, with an average of **12.9 pounds** of organic materials (edible food, food scraps, compostable paper and plastic, other compostable items, and yard waste).

RECYCLING COMPOSITION RESULTS:

- The most common material in the recycling stream was uncoated old corrugated cardboard (OCC), followed by food and beverage glass, mixed paper, and #1 PET bottles/jars.
- The overall average capture rate of recyclables was **66%** across all categories, material types, and service days, indicating that approximately **34%** of recyclables are being disposed of in the garbage. Newspaper had the highest average capture rate at **95%**, while #5 PP plastic had the lowest average capture rate at **26%**.
- The average recycling contamination rate varied slightly amongst the five service days, with an overall average rate of **10.4%**.
- The average weight of recycling collected from a household was **12.1** pounds of material per household.



Diversion Opportunities

The results of the study offer opportunities to increase waste diversion based on the composition of materials.

- The diversion opportunity for organics is substantial: **21.0%** of the waste stream was food scraps, **9.2%** was edible food, and **7.1%** was compostable paper.
- Despite the amount of uncoated OCC that is recycled, more material could be diverted, as **2.5%** was not captured in the recycling stream.
- Household hazardous waste represented **1.4%** of the waste stream and requires safe handling for proper disposal.
- Overall diversion opportunity was **49.6%** of the waste stream.

Key Findings and Recommendations

The City's existing collection program provides consistent service and diversion opportunities to its residents. Generally high capture rates, low contamination, and high participation indicate residents are aware of programs. The study's results can aid future efforts by focusing on these actions:

Increase recycling opportunities *by targeting specific material types for recycling education (including materials that can be recycled and sources of contamination).*

- Nearly 10% of the garbage stream was recyclable materials that can be collected curbside. The City can increase diversion by focusing education on materials that residents are unsure about, to encourage proper recycling.
- The City could feature common contaminants to the recycling stream, such as liquid-containing containers and compostable paper, in educational materials to promote understanding and improve recycling habits.

Be cognizant of service day differences *while developing educational materials.*

- Use demographic data to identify which languages may be most effective for recycling education.
- Create targeted informational campaigns that are suited to the material types and languages that are most relevant to the communities in specific service areas.

Increase diversion *by starting new programs or promoting existing programs for specific materials.*

- Over 38% of the garbage stream was organic material. The Food Scrap Pickup Program (FSPP) will soon be available to City residents to divert this material. Additionally, 9.2% of the garbage was categorized as edible food, which provides an opportunity to promote food rescue.
- On average, 1.4% of the garbage was household hazardous waste (HHW) and only 0.1% batteries, indicating that residents are generally disposing of these materials properly. While these are small percentages, the impact of improperly disposed of HHW can be significant.
- Minnesota recently passed legislation to implement Extended Producer Responsibility (EPR) for packaging and paper products to divert and recycle these materials.
- The City's garbage was 11.1% plastic and 6.5% paper/fiber. Though not all these materials will be managed through EPR, there is an opportunity for significant diversion of some materials through the implementation of EPR.